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EXAMINER	
THOMPSON, JAMES A	

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2624	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/805,243	MISAWA, REIJI
	Examiner	**Art Unit**
	James A Thompson	2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 March 2001 and 19 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 March 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "S1305" in figure 13 and "1500" in figure 15. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to because there are instances of grammatical error in the drawings. In figure 4, a caption states "Size other them A4 are also usable". This should be

modified to "Sizes other than A4 are also usable" or "Size other than A4 is also usable" or another grammatically correct statement. Figures 9 and 10 use the word "temporality" as an adjective and not a noun. An appropriate adjective should be used such as "temporarily".

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:

The specification is replete with spelling and grammatical errors. Some examples include:

Page 1, line 21 states "density characteriscis".

Page 3, line 1 states "'0' corresponding to while" which should clearly be "'0' corresponding to white".

Page 3, line 7 states "printout denwsity".

This is not an exhaustive list. Applicant is advised to inspect the language of the specification and correct any and all spelling and grammatical errors.

Appropriate correction is required.

5. The disclosure is objected to because of the following informalities:

On page 4, lines 9-11, reference is made to three Japanese Laid-open Patent Applications. U.S. versions of two of these applications have since been applied for in the United States and have had patents granted. Particularly, the U.S. version of Japanese Patent Applications 11-75067 and 2000-59643 has been granted US Patent Number 6,697,167 B1. The specification needs to be updated to reflect this fact.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 2 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites "the gradient pattern is composed of *plural density patches.*" Do the patches each contain plural densities, or does Applicant mean that there is a plurality of density patches? The language of claim 2, as written, is unclear in this respect. For the purpose of examining claim 2 over the prior art, Examiner will interpret claim 2 to mean that the gradient pattern is composed of a plurality of density patches since said interpretation is supported by the specification.

8. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 recites "creation means for creating *a correction table* for correcting the density characteristics" and later recites "setting means for setting the correction table created by said creation means, as the correction table to be used by the image formation apparatus". Multiple correction tables have *not* been recited in claim 7, so why is there a setting means and how can a setting means set the correction table when there is only one correction table? Setting the correction table as the correction table to be used by the image formation apparatus implies that there is more than one correction table, but claim 7 does not recite the creation of multiple correction tables from which said setting means sets a particular correction table. The invention recited in claim 7 is therefore self-contradictory and does not distinctly claim the subject matter which applicant regards as the invention.

9. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 recites a "second memory means for storing *a correction table* for correcting the density characteristics" and later recites "selecting means for selecting, from said second memory means, a correction table suitable for correcting the density characteristics" and "setting means for setting the correction table created by said creation means". Selecting a correction table and setting a correction table inherently implies that there is more than one correction table to choose from. Otherwise, there is nothing to select between and the one existing correction table is inherently set since there are no other correction tables to set in the place of the one existing correction table. However, the second memory means only stores one correction table. There are no other correction table for said selecting means to select and said setting means to set. The invention recited in claim 8 is therefore self-contradictory and does not distinctly claim the subject matter which applicant regards as the invention.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

> Patentability shall not be negatived by the manner in which the invention was made.

11. Claims 1-3, 9-11 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US Patent 5,889,928) in view of Murayama (US Patent 5,978,506).

Regarding claims 1 and 9: Nakamura discloses an image forming apparatus (figure 2 of Nakamura) comprising reading means (figure 2(1) of Nakamura) for reading an image and generating image data (column 8, lines 12-15 of Nakamura); creation means (figure 2(70) of Nakamura) for creating a correction table for correcting the density characteristics of the image data (figure 3; column 8, lines 66-67 and column 9, lines 3-6 of Nakamura); correction means (figure 2(64) of Nakamura) for correcting the density characteristics of the image data from said reading means (column 9, lines 18-22 of Nakamura), based on the correction table created by said creation means (figure 4 (S1-S3) and column 9, lines 41-44 of Nakamura); and output means (figure 1(2) of Nakamura) for outputting an image based on the image data corrected by said correction means (column 9, lines 18-22 of Nakamura), wherein said creation means creates the correction table by applying a smoothing process using adjacent data whose number is determined by a range of smoothing (figure 7(S86) and column 13, lines 41-44 of Nakamura), based on data generated by said reading means by reading a gradient pattern outputted by said output means (column 12, lines 44-45 and column 10, line 63 to column 11, line 2 of Nakamura). Alleviating a sudden change in gradation or a gradation jump (figure 7(S86) and column 13, lines 41-44 of Nakamura) is one type of smoothing operation. Basing said smoothing on a range of smoothing is inherent since a sudden

change in gradation or a gradation jump cannot be detected with a single data point. A certain range of data points is required to detect a sudden change or jump.

Nakamura does not disclose expressly that said reading means reads plural gradient patterns, wherein said plural gradient patterns are disposed in point symmetry with respect to a center position of the image.

Murayama discloses reading plural gradient patterns (figure 11 and column 9, lines 12-18 of Murayama), wherein said plural gradient patterns are disposed in point symmetry with respect to a center position of the image (figure 11 and column 9, lines 15-18 of Murayama). As can clearly be seen in figure 11 of Murayama, the four gradation patterns (figure 11(310,320,330, 340) of Murayama) are arranged in point symmetry with respect to the center position of the image (figure 11(300) of Murayama).

Nakamura and Murayama are combinable because they are from the same field of endeavor, namely color and gradation correction in image processing and reproduction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use multiple gradient patterns arranged symmetrically about the center of the image, as taught by Murayama. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura to obtain the invention as specified in claims 1 and 9.

Regarding claims 2 and 10: Nakamura discloses that the gradient pattern (figure 3 of Nakamura) is composed of plural

density patches (figure 3(TP1-TP16); column 8, lines 66-67 and column 9, lines 3-6 of Nakamura).

Regarding claims 3 and 11: Nakamura discloses that said creation means determines a train of density data (figure 5a and column 9, lines 65-67 of Nakamura) based on an average value of the plural brightness data obtained by the gradient pattern (column 10, lines 1-5 of Nakamura) and applies an interpolating process (column 10, lines 63-66 of Nakamura) and a smoothing process to the density data train (column 10, line 66 to column 11, line 2 of Nakamura), thereby to create the correction table (column 11, lines 2-3 of Nakamura).

Nakamura does not disclose expressly that said average value is obtained by the plural gradient patterns.

Murayama discloses reading plural gradient patterns (figure 11 and column 9, lines 12-18 of Murayama) and obtaining color correction data based on said plural gradient patterns (column 9, lines 1-7 of Murayama).

Nakamura and Murayama are combinable because they are from the same field of endeavor, namely color and gradation correction in image processing and reproduction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the gradation data read from the plural gradient patterns, as taught by Murayama, and compute for each density value an average for all of the pixels of the density patches representing the same density value, as taught by Nakamura, in the plural gradient patterns taught by Murayama. The motivation for doing so would have been to eliminate the influence of depth or density variations of the pixels (column 10, lines 4-5 of Nakamura). Therefore, it would have been

obvious to combine Murayama with Nakamura to obtain the invention as specified in claims 3 and 11.

Regarding claim 15: Nakamura discloses an output step of outputting a test chart (figure 3 and column 8, line 66 to column 9, line 6 of Nakamura); and a detection step of detecting the condition of the image forming apparatus from the test chart (column 9, lines 15-22 of Nakamura), wherein the test chart outputted in said output step is the test chart used in said detection step for detecting the condition of the image forming apparatus (column 8, lines 66-67 and column 9, lines 18-22 of Nakamura). The condition of the image forming apparatus is determined since the test pattern provides the gradation correction curve data (column 9, lines 15-17 of Nakamura), which is indicative of the actual apparatus state, and is thus able to properly reproduce the image with the printer (column 9, lines 17-22 of Nakamura).

Nakamura does not disclose expressly that said test chart is composed of plural gradient patterns which are disposed in a point symmetry with respect to a center position of the image.

Murayama discloses a test pattern (figure 11 of Murayama) composed of plural gradient patterns (column 9, lines 12-18 of Murayama) which are disposed in point symmetry with respect to a center position of the image (figure 11 and column 9, lines 15-18 of Murayama). As can clearly be seen in figure 11 of Murayama, the four gradation patterns (figure 11(310,320,330, 340) of Murayama) are arranged in point symmetry with respect to the center position of the image (figure 11(300) of Murayama).

Nakamura and Murayama are combinable because they are from the same field of endeavor, namely color and gradation correction in image processing and reproduction systems. At the

time of the invention, it would have been obvious to a person of ordinary skill in the art to use multiple gradient patterns arranged symmetrically about the center of the image, as taught by Murayama. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura to obtain the invention as specified in claim 15.

Regarding claim 16: Nakamura discloses a printing step of printing a test image on a print paper (figure 3 and column 8, line 66 to column 9, line 6 of Nakamura); and a detection step of detecting the condition of the image forming apparatus from the test image printed on the print paper (column 9, lines 15-22 of Nakamura), wherein print paper on which the test image is printed in said printing step is the print paper for detecting the condition of the image forming apparatus in said detection step (column 8, lines 66-67 and column 9, lines 18-22 of Nakamura). Since image output (column 8, lines 31-33 of Nakamura) and gradation correction is performed using a printer (figure 1(21) and column 8, lines 21–28 of Nakamura), then said test image is printed on a print paper. The condition of the image forming apparatus is determined since the test pattern provides the gradation correction curve data (column 9, lines 15-17 of Nakamura), which is indicative of the actual apparatus state, and is thus able to properly reproduce the image with the printer (column 9, lines 17-22 of Nakamura).

Nakamura does not disclose expressly that said test image is composed of plural gradient patterns which are disposed in a

point symmetry with respect to a center position of the print paper.

Murayama discloses a test image (figure 11 of Murayama) composed of plural gradient patterns (column 9, lines 12-18 of Murayama) which are disposed in point symmetry with respect to a center position of the print paper (figure 11 and column 9, lines 15-18 of Murayama). As can clearly be seen in figure 11 of Murayama, the four gradation patterns (figure 11(310,320,330, 340) of Murayama) are arranged in point symmetry with respect to the center position of the print paper (figure 11(300) of Murayama).

Nakamura and Murayama are combinable because they are from the same field of endeavor, namely color and gradation correction in image processing and reproduction systems. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use multiple gradient patterns arranged symmetrically about the center of the print paper, as taught by Murayama. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura to obtain the invention as specified in claim 16.

12. Claims 4-8 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura (US Patent 5,889,928) in view of Hayashi (US Patent 5,754,683) and Murayama (US Patent 5,978,506).

Regarding claim 4: Nakamura discloses an image forming apparatus (figure 2 of Nakamura) comprising reading means

(figure 2(1) of Nakamura) for reading an image and generating image data (column 8, lines 12-15 of Nakamura); memory means (figure 2(73) of Nakamura) for storing a correction table for correcting the density characteristics of image data (column 9, lines 15-17 of Nakamura); correction means (figure 2(64) of Nakamura) for correcting the density characteristics of the image data from said reading means (column 9, lines 18-22 of Nakamura), based on the correction table created by said creation means (figure 4 (S1-S3) and column 9, lines 41-44 of Nakamura); and output means (figure 1(2) of Nakamura) for outputting an image based on the image data corrected by said correction means (column 9, lines 18-22 of Nakamura).

Nakamura does not disclose expressly that said memory means stores plural correction tables; selection means for selecting a correction table suitable for correction from said memory means; that said correction means corrects the density data based on the correction table selected by said selection means; and that said selection means selects the correction table based on data generated by said reading means by reading plural gradient patterns outputted by said output means, and the plural gradient patterns outputted by said output means are disposed in point symmetry with respect to a center position of the image.

Hayashi discloses memory means (figure 2(72) of Hayashi) which stores plural correction tables (figure 6b and column 14, lines 11-15 of Hayashi); selection means (figure 2(70) and column 10, lines 63-64 of Hayashi) for selecting a correction table suitable for correction from said memory means (figures 6a-6b and column 14, lines 18-24 of Hayashi); and that said correction means corrects the density data based on the

correction table selected by said selection means (column 14, lines 22-25 of Hayashi).

Nakamura and Hayashi are combinable because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide a plurality of gradation correction curves and means to select the most appropriate gradation correction curve, as taught by Hayashi. The motivation for doing so would have been to reduce the processing time required for adjusting the gradation output (column 7, lines 23-31 of Hayashi). Therefore, it would have been obvious to combine Hayashi with Nakamura.

Nakamura in view of Hayashi does not disclose expressly that said selection means selects the correction table based on data generated by said reading means by reading plural gradient patterns outputted by said output means, and the plural gradient patterns outputted by said output means are disposed in point symmetry with respect to a center position of the image.

Murayama discloses reading plural gradient patterns (figure 11 and column 9, lines 12-18 of Murayama), wherein said plural gradient patterns are disposed in point symmetry with respect to a center position of the image (figure 11 and column 9, lines 15-18 of Murayama). As can clearly be seen in figure 11 of Murayama, the four gradation patterns (figure 11(310,320,330, 340) of Murayama) are arranged in point symmetry with respect to the center position of the image (figure 11(300) of Murayama).

Nakamura in view of Hayashi is combinable with Murayama because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to

generate the correction tables, as taught by Nakamura, using the plural gradient patterns taught by Murayama, and selecting the appropriate correction table using the selection means taught by Hayashi. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura in view of Hayashi to obtain the invention as specified in claim 4.

Regarding claim 12: Nakamura discloses reading a gradient pattern (figure 3 and column 9, lines 63-67 of Nakamura) and generating a correction table for correcting the density characteristics of image data (column 8, line 66 to column 9, line 6 of Nakamura), by applying a smoothing process using adjacent data whose number is determined by a range of smoothing (figure 7(S86) and column 13, lines 41-44 of Nakamura); a correction step of correcting the read image, utilizing the generated correction table (column 9, lines 18-22 of Nakamura); and an output step of outputting the image corrected in said correction step (column 9, lines 18-22 of Nakamura). Alleviating a sudden change in gradation or a gradation jump (figure 7(S86) and column 13, lines 41-44 of Nakamura) is one type of smoothing operation. Basing said smoothing on a range of smoothing is inherent since a sudden change in gradation or a gradation jump cannot be detected with a single data point. A certain range of data points is required to detect a sudden change or jump.

Nakamura does not disclose expressly a selection step of reading plural gradient patterns and selecting a correction

table based on the read plural gradient patterns; utilizing the correction table selected in said selection step; and that the plural gradient patterns for selecting the correction table are disposed in point symmetry with respect to a center position of the image.

Hayashi discloses a selection step of selecting a correction table based on the read gradient patterns (figures 6a-6b and column 14, lines 18-24 of Hayashi); and utilizing the correction table selected in said selection step (column 14, lines 22-24 of Hayashi).

Nakamura and Hayashi are combinable because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to select the most appropriate gradation correction curve out of a plurality of gradation correction curves, as taught by Hayashi. The motivation for doing so would have been to reduce the processing time required for adjusting the gradation output (column 7, lines 23-31 of Hayashi). Therefore, it would have been obvious to combine Hayashi with Nakamura.

Nakamura in view of Hayashi does not disclose expressly reading plural gradient patterns; and that the plural gradient patterns for selecting the correction table are disposed in point symmetry with respect to a center position of the image.

Murayama discloses reading plural gradient patterns (figure 11 and column 9, lines 12-18 of Murayama); and that the plural gradient patterns for selecting the correction table are disposed in point symmetry with respect to a center position of the image (figure 11 and column 9, lines 15-18 of Murayama). As can clearly be seen in figure 11 of Murayama, the four gradation

patterns (figure 11(310,320,330, 340) of Murayama) are arranged in point symmetry with respect to the center position of the image (figure 11(300) of Murayama).

Nakamura in view of Hayashi is combinable with Murayama because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate the correction tables, as taught by Nakamura, using the plural gradient patterns taught by Murayama, and selecting the appropriate correction table using the selection means taught by Hayashi. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura in view of Hayashi to obtain the invention as specified in claim 12.

Regarding claims 5 and 13: Nakamura discloses that the gradient pattern is solely composed of a patch of a maximum density (figure 3; column 8, line 66 to column 9, line 6; and column 19, lines 50-55 of Nakamura). A gradient pattern (figure 3 of Nakamura) is formed using a specific number of patches whose density value is increased by stages (column 8, line 66 to column 9, line 6 of Nakamura). The example given shows 16 density patches (column 9,lines 4-6 of Nakamura). However, the use of 16 patches is simply an example (column 19, lines 50-55 of Nakamura). The patch density values that are considered important for correcting the gradation are the patch density values that can be detected above the ground data level (column 11, lines 40-45 of Nakamura), such as the maximum density.

Therefore, if the user selects only patch to be used for gradation processing, then the density that would be used for the test patch would the maximum density. Hence, the gradient pattern would solely be composed of a patch of maximum density.

Regarding claims 6 and 14: Nakamura discloses that the correction table is determined according to a density value determined from the average of plural brightness data obtained by reading the maximum density patch (column 10, lines 1-5 of Nakamura). The maximum density patch is one of the patches (figure 11(TP16) of Nakamura) used for gradation correction and is read to determine the correction table. Further, as discussed in the arguments regarding claim 5, the maximum density patch can be the only patch of the gradation pattern that is to be printed and read.

Nakamura does not disclose expressly that said selection means selects the correction table based on said density value of maximum density patches of plural gradient patterns.

Hayashi discloses that said selection means selects the correction table based on the density values obtained (column 14, lines 34-39 and lines 43-45 of Hayashi), which includes the maximum density value (figure 7(G8) of Hayashi).

Nakamura and Hayashi are combinable because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the selection means taught by Hayashi to select the correction table based on a maximum density value. The motivation for doing so would have been to reduce the processing time required for adjusting the gradation output (column 7, lines 23-31 of Hayashi) by having a plurality of gradation curves that can be matched to the data

(column 14, lines 43-47 of Hayashi). Therefore, it would have been obvious to combine Hayashi with Nakamura.

Nakamura in view of Hayashi does not disclose expressly that said maximum density value is obtained from reading maximum density patches of plural gradient patterns.

Murayama discloses obtaining density data from reading plural gradient patterns (figure 11 and column 9, lines 12-18 of Murayama).

Nakamura in view of Hayashi is combinable with Murayama because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to obtain said density value of a maximum density patch, as taught by Nakamura in view of Hayashi, from the maximum density patches of the plural gradient patterns taught by Murayama. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura in view of Hayashi to obtain the invention as specified in claim 6.

Regarding claim 7: Nakamura discloses a control apparatus (figure 2 of Nakamura) connected to an image forming apparatus (figure 1(21) and column 8, lines 31-33 of Nakamura) comprising memory means (figure 2(73) and column 8, line 40 of Nakamura) for storing image data for outputting a test image (figure 3 and column 9, lines 3-9 of Nakamura); output control means (figure 2(66) of Nakamura) for controlling the image forming apparatus so as to output a test image based on the image data stored in said memory means (column 8, lines 60-64 of Nakamura); reading

control means (figure 2(70(portion)) of Nakamura) for causing the image forming apparatus to read the test image outputted by said image forming apparatus, thereby to generate image data (column 9, lines 66-67 and column 10, lines 17-20 of Nakamura); creation means (figure 2(70(portion)) of Nakamura) for creating a correction table for correction the density characteristics of said image forming apparatus (figure 3; column 8, lines 66-67 and column 9, lines 3-6 of Nakamura), by applying a smoothing process using adjacent data whose number is determined by a range of smoothing (figure 7(S86) and column 13, lines 41-44 of Nakamura), based on image data obtained from the test image read by the image forming apparatus (column 12, lines 44-45 and column 10, line 63 to column 11, line 2 of Nakamura). Alleviating a sudden change in gradation or a gradation jump (figure 7(S86) and column 13, lines 41-44 of Nakamura) is one type of smoothing operation. Basing said smoothing on a range of smoothing is inherent since a sudden change in gradation or a gradation jump cannot be detected with a single data point. A certain range of data points is required to detect a sudden change or jump. The CPU (figure 2(70) of Nakamura) controls the overall operation of the control apparatus (column 8, lines 34-35 of Nakamura). Said control means and said creation means are therefore the portions of said CPU, along with the associated portions of embodied software, that perform the functions of said control means and said creation means.

Nakamura does not disclose expressly setting means for setting the correction table created by said creation means, as the correction table to be used by the image forming apparatus; and that said memory means stores image data for outputting a

test image in which plural gradient patterns are disposed in point symmetry with respect to the center position of the image.

Hayashi discloses setting means (figure 2(70) and column 10, lines 63-64 of Hayashi) for setting the correction table created by said creation means, as the correction table to be used by the image forming apparatus (figures 6a-6b and column 14, lines 18-24 of Hayashi).

Nakamura and Hayashi are combinable because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a setting means to select the most appropriate correction table for the image forming apparatus, as taught by Hayashi. The motivation for doing so would have been to reduce the processing time required for adjusting the gradation output (column 7, lines 23-31 of Hayashi). Therefore, it would have been obvious to combine Hayashi with Nakamura.

Nakamura in view of Hayashi does not disclose expressly that said memory means stores image data for outputting a test image in which plural gradient patterns are disposed in point symmetry with respect to the center position of the image.

Murayama discloses reading plural gradient patterns (figure 11 and column 9, lines 12-18 of Murayama), wherein said plural gradient patterns are disposed in point symmetry with respect to a center position of the image (figure 11 and column 9, lines 15-18 of Murayama). As can clearly be seen in figure 11 of Murayama, the four gradation patterns (figure 11(310,320,330, 340) of Murayama) are arranged in point symmetry with respect to the center position of the image (figure 11(300) of Murayama).

Nakamura in view of Hayashi is combinable with Murayama because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate and store the correction tables, as taught by Nakamura, using the plural gradient patterns taught by Murayama. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura in view of Hayashi to obtain the invention as specified in claim 7.

Regarding claim 8: Nakamura discloses a control apparatus (figure 2 of Nakamura) connected to an image forming apparatus (figure 1(21) and column 8, lines 31-33 of Nakamura) comprising first memory means (figure 2(73) and column 8, line 40 of Nakamura) for storing image data for outputting a test image (figure 3 and column 9, lines 3-9 of Nakamura); second memory means (figure 2(74) of Nakamura) for storing a correction table (column 8, lines 40-43 of Nakamura) for correcting the density characteristics of the image forming apparatus (column 8, lines 66-67 and column 9, lines 3-6 of Nakamura); output control means (figure 2(66) of Nakamura) for controlling the image forming apparatus so as to output a test image based on the image data stored in said first memory means (column 8, lines 60-64 of Nakamura); and reading control means (figure 2(70) of Nakamura) for causing the image forming apparatus to read the test image outputted by said image forming apparatus, thereby to generate image data (column 9, lines 66-67 and column 10, lines 17-20 of Nakamura).

Nakamura does not disclose expressly selection means for selecting, from said second memory means, a correction table suitable for correcting the density characteristics of said image forming apparatus, based on image data obtained from the test image read by the image forming apparatus; setting means for setting the correction table created by said creation means, as the correction table to be used by the image forming apparatus; and that said first memory means stores image data for outputting a test image in which plural gradient patterns are disposed in point symmetry with respect to the center position of the image.

Hayashi discloses selection means (figure 2(70) and column 10, lines 63-64 of Hayashi) for selecting, from said second memory means, a correction table suitable for correcting the density characteristics of said image forming apparatus (figures 6a-6b and column 14, lines 18-24 of Hayashi), based on image data obtained from the test image read by the image forming apparatus (column 13, lines 26-33 of Hayashi); and setting means (figure 2(70) and column 10, lines 63-64 of Hayashi) for setting the correction table created by said creation means, as the correction table to be used by the image forming apparatus (figures 6a-6b and column 14, lines 18-24 of Hayashi).

Nakamura and Hayashi are combinable because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide a plurality of gradation correction curves and means to select and set the most appropriate gradation correction curve to be used, as taught by Hayashi. The motivation for doing so would have been to reduce the processing time required for adjusting the gradation output

(column 7, lines 23-31 of Hayashi). Therefore, it would have been obvious to combine Hayashi with Nakamura.

Nakamura in view of Hayashi does not disclose expressly that said first memory means stores image data for outputting a test image in which plural gradient patterns are disposed in point symmetry with respect to the center position of the image.

Murayama discloses reading plural gradient patterns (figure 11 and column 9, lines 12-18 of Murayama), wherein said plural gradient patterns are disposed in point symmetry with respect to a center position of the image (figure 11 and column 9, lines 15-18 of Murayama). As can clearly be seen in figure 11 of Murayama, the four gradation patterns (figure 11(310,320,330, 340) of Murayama) are arranged in point symmetry with respect to the center position of the image (figure 11(300) of Murayama).

Nakamura in view of Hayashi is combinable with Murayama because they are from the same field of endeavor, namely image gradation correction. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate and output the test image stored in said first memory means, as taught by Nakamura, using the plural gradient patterns taught by Murayama. The motivation for doing so would have been to be able to correct the color and gradation for multiple sets of dithering patterns (column 9, lines 1-7 of Murayama), thus providing a broader and more complete correction process. Therefore, it would have been obvious to combine Murayama with Nakamura in view of Hayashi to obtain the invention as specified in claim 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 703-305-6329. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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James A. Thompson
Examiner
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JAT
15 October 2004

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PRIMARY EXAMINER